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REMARKS/ARGUMENTS

In an Office Action mailed September 16, 2004, the Examiner rejected claims 1-25. The Examiner rejected claims 8-15 and 22, 23 and 25, as allegedly claiming the same invention as that of claims of US 6,729,707. The Examiner rejected claims 1-7, 16-21 and 24 for alleged obviousness-type double patenting over US 6,729,707. The Examiner also rejected claims 1-3, 5, 7, 16, 18-21 and 24 as allegedly unpatentably obvious over US 5,357,081 (Bohorquez) in view of US 4,514,737 (Suzuki) and US 6,208,127 (Doluca). The Examiner also rejected claim 17 as allegedly unpatentably obvious over Bohorquez in view of Suzuki and Doluca, as applied to claim 16, and further in view of US 6,145,961 (Otsuki).

Statutory Double Patenting:

Applicants herewith cancel claims 8-15, 22, 23 and 25. Applicants respectfully submit that the Examiner's rejections of claims 8-15, 22, 23 and 25 for statutory-type double patenting are therefore moot. Please note, in section 1 of the Office Action, in which the statutory double patenting rejections are discussed, the Examiner stated that "Claim 25 is rejected under the judicially created doctrine of double patenting over claim 119 of U.S. Patent No. 6729707." The Applicant understands this statement to be a mistake. Applicant reads the Office Action as rejecting claim 25 under statutory double patenting over claim 19 of the cited patent.

Obviousness-Type Double Patenting:

Applicants previously filed a Terminal Disclaimer under 37 CFR 1.321(c) with respect to US 6,729,707 (Corrigan). Applicants filed the Terminal Disclaimer on August 30, 2004. Applicants therefore respectfully request that the Examiner withdraw all rejections based on obviousness-type double patenting over US 6,729,707 as moot. Since obviousness-type double patenting is the only stated basis for rejecting claims 4 and 6 in the Office Action mailed September 16, 2004, Applicant respectfully requests that the Examiner allow claims 4 and 6.

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Obviousness:

In the Office Action, the Examiner rejected claims 1-3, 5, 7, 16, 18-21 and 24 as allegedly obvious over Bohorquez in view of Suzuki and Doluca. The Examiner also rejected claim 17 as allegedly unpatentably obvious over Bohorquez in view of Suzuki and Doluca, as applied to claim 16, and further in view of Otsuki.

Applicant respectfully submits that the Examiner has failed to establish a prima facie case of obviousness with respect to any of the rejected claims, at least because he has failed to establish a motivation to combine the ink jet printhead of Bohorquez with the contact thermal printer of Suzuki. Nor has the Examiner established a motivation to combine any of Bohorquez, Suzuki, Doluca or Otsuki to practice the subject matter of any one of the rejected claims.

Bohorquez discusses a ". . . control circuit for the heater resistor of a thermal inkjet printhead . . ." 3:48-49. Suzuki discusses a "thermal printer" for which a "printing operation is carried out by bringing a paper sheet into direct, firm contact with the heat generating elements 5 . . ." 1:40-59. Doluca relates to a voltage regulator. Otsuki relates to an Ink-Jet Printing Apparatus. The Examiner has not shown a motivation to provide the "contact" thermal printer of Suzuki with the "thermal inkjet printhead" of Bohorquez, the voltage regulator of Doluca and/or the inkjet printing apparatus of Otsuki to practice the subject matter of any one of the rejected claims 1-3, 5, 7, 16, 17, 18-21 or 24. Applicants respectfully request that the Examiner withdraw all of the obviousness rejections and allow claims 1-3, 5, 7, 16, 17, 18-21 and 24.

The Examiner rejected claims 1-3, 5, 7, 16, 17, 18-21 and 24 as allegedly obvious over Bohorquez in view of Suzuki and Doluca and/or (in the case of claim 17) in further view of Otsuki. The Applicant respectfully submits that the Examiner has failed to show a prima facie case of obviousness at least because none of Bohorquez, Suzuki, Doluca and/or Otsuki, alone or in combination,

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disclose, teach or suggest all of the limitations of any of the rejected claims. For example, none of Bohorquez, Suzuki, Doluca and/or Otsuki, alone or in combination, disclose, teach or suggest at least the following limitations in their respective claimed combinations:

" . . . a power regulator providing an offset voltage from the internal power supply path voltage, the power regulator including a self-calibration circuit adapted to determine a regulation band of the power regulator defined by a lower set point offset voltage and an upper set point offset voltage . . . and . . . switches controllable to couple a selected firing resistor . . . between the internal power supply path and the offset voltage "

as recited in independent claims 1 and 16 and incorporated into dependent claims 2, 3, 5 and 7 and 17, respectively;

" . . . coupling a selected firing resistor of a group of firing resistors between an internal power supply path and an offset voltage from the internal power supply path voltage to cause electrical current to pass through the selected firing resistor to cause a corresponding selected nozzle to fire; and

determining a power regulation band defined by a lower set point offset voltage and an upper set point offset voltage."

as recited in independent claim 18 and incorporated into dependent claims 19-21;

" . . . a power delivery control loop providing an offset voltage from an internal power supply path voltage, wherein a selected firing resistor in the fluid ejection device is coupled between the internal power supply path and the offset voltage to cause electrical current to pass through the selected firing resistor to cause a corresponding selected nozzle to fire; and . . . a self-calibration circuit adapted to determine a regulation band

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of the power regulator defined by a lower set point offset voltage and an upper set point offset voltage.”
as recited in independent claim 24.

In support of the rejections, the Examiner stated that Suzuki allegedly discloses an apparatus, wherein the “apparatus has an internal power supply path (FIG. 10, element Vcc) and a power regulator (FIG. 10, elements 32-33) providing an offset voltage from the Internal power supply path (FIG. 10: The voltage at the input of the op-amp 31).” Suzuki states, “[t]he power source voltage Vcc is supplied to a microcomputer 30 through a level shift circuit 29, The [(sic)] output signal (a pulse signal) of the microcomputer 30 is supplied to a driving circuit 14 after being amplified by an operational amplifier 31.” 6:45-50. It does not disclose, teach or suggest, alone or in combination with the other references, to couple or coupling “a selected firing resistor . . . between the internal power supply path and the offset voltage” as recited in claims 1, 16, or that “a selected firing resistor in the fluid ejection device is coupled between the internal power supply path and the offset voltage to cause electrical current to pass through the selected firing resistor” as recited in claim 24.

Further, Applicants submit that Suzuki gives no indication as to how level shift circuit 29 operates. Therefore, it cannot be said to determine a regulation band of the power regulator defined by a lower set point offset voltage and an upper set point offset voltage, as recited in claim 1 and 16, or to show a power delivery control loop providing an offset voltage from an internal power supply path voltage, as recited in claim 24. Suzuki does not disclose whether there is any offset performed by the level shift circuit.

Moreover, the microcomputer 30 of Suzuki operates so that a variation of the power source voltage Vcc is detected. The delay time and pulse width of a driving pulse signal p, as shown in FIG. 11b with respect to the print timing signal d3, is determined according to a variation of the power source

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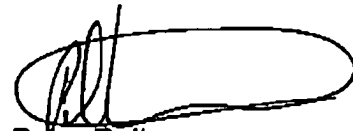
voltage V_{cc} . The microcomputer 30 produces a drive pulse signal p , as shown in FIG. 11b, whose rise time is delayed with reference to the timing signal $d3$ for the interval mentioned. The driving pulse signal p continues to be supplied until the period of time corresponding to the pulse width so determined has elapsed. Then, the generation of the driving pulse signal p is stopped. 6:55-56. Therefore, the microcomputer 30 does not alter the magnitude of the signal supplied to amplifier 31 but only its pulse width and start time. This is backed up by Fig. 12, which shows the operation of the microcomputer 30, which shows only changing delays and pulse widths. Therefore, claims 1, 16, and 24 are allowable for this reason independently as well.

In addition, as discussed above, the Examiner has failed to show a motivation to combine the cited references to disclose, teach or suggest all of the limitations of the rejected claims. Accordingly, the Applicant respectfully requests that the Examiner withdraw all of the pending obviousness rejections and allow pending claims 1-3, 5, 7, 16, 17, 18-21 and 24.

CONCLUSION

For the foregoing reasons, the Applicant respectfully requests that the Examiner withdraw the rejections and allow the pending claims.

Respectfully submitted,



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Dated: 11/10/04

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